

B.Sc. Sem II

BOT- 52T- 103 Molecular Biology, Genetics and Diversity of plant Kingdom II

Short Answer Type Questions

1. Which type of replication is present in DNA?
2. Which of the enzyme is used to separate two strands during DNA replication?
3. Which of the experimental material was used in the study of DNA replication?
4. Which enzyme are used to join fragments of DNA?
5. What is synthesis of DNA fragments on lagging strands during replication called?
6. Define DNA replication.
7. Write the definition of transcription?
8. What is the primary transcript?
9. Name factor of transcription.
10. Define codon.
11. How many types of amino acids are present in organisms.
12. Define anticodon.
13. Define ambiguous code.
14. What is the universality of a code?
15. What is chain initiation codon?
16. What are terminal codes?
17. What is the start codon of translation?
18. Name factors used in prokaryotic translation.
19. What are the stop codons of translation?
20. Define translation.
21. Polypeptide chain starts with which amino acid.
22. What is the role of the f3 factor in translation?
23. What is the role of F2 in translation?
24. What happens first when DNA replication starts?
25. What are polymerases?
26. Write a short note on enzymes of DNA synthesis.
27. What is heredity?
28. What is incomplete dominance?
29. What is codominance?
30. On which plant Mendal performed experiment and why?
31. State Mendel's law of inheritance.
32. What is the phenotypic ratio of Mendelian dihybrid cross?
33. What is Epistasis?
34. What are polygenes?
35. What is the importance of the study of blood groups?

36. Which is the best example of a duplicate gene?
37. What is the phenotypic ratio of complementary gene?
38. Define duplicate factor.
39. What are plasma gene?
40. Define cytoplasmic inheritance.
41. What is ploidy of the bread wheat?
42. Define polyploidy?
43. What are the uses of deletions?
44. Define Euploidy?
45. What are deletions?
46. What is duplication?
47. What is translocation?
48. What is Inversion?
49. What is Aneuploidy?
50. What is mutation?
51. What are mutagens? Give example.
52. Name the types of mutations.
53. Name two physical mutagens.
54. Name two chemical mutagens.
55. What is induced mutation?
56. Write two practical applications of mutation.
57. Name to Heterosporus pteridophyte.
58. What is legule?
59. What is homospory?
60. What is Stele?
61. What is protostele?
62. What is siphonostele?
63. Who discovered Rhynia?
64. Write primitive characters of Rhynia
65. Name the sporangia of Psilotum.
66. Which are the two species of Psilotum?
67. What type of branching was found in Rhynia?
68. Which plant is called spike moss?
69. What is rhizophore?
70. Name the xerophytic species of selaginella.
71. How many types of spores are present in Selaginella?
72. Name two species of Rhynia.
73. What is the common name of Equisetum?
74. Equisetum is indicator of which metal?
75. What is deposited in plant of Equisetum?

76. Which plant is called Pepperwort?
77. What is amphiphloic siphonostele?
78. Draw external diagram of sporocarp.
79. Name hydrophytic species of Marsilea.
80. What is trabeculae?
81. Write classification of Selaginella.
82. What is the function of fungal hyphae found in Psilotum?
83. Where is tubercle present in Marsilea?
84. What is nodal diaphragm ?
85. Write the speciality of gymnospermic wood.
86. When did primitive gymnosperms originate?
87. In which order of gymnosperms you expect to find bitegmic ovules.
88. Write the peculiar features of pollination and fertilization of gymnosperms
89. Which microorganism is found in coralloid root of *Cycas*.
90. Write a significance of *Cycas revoluta*.
91. Draw diagram of leaflet of *Cycas*.
92. Write a note on bulbils.
93. What is transfusion tissues? What is its importance?
94. Give five important characters of the order Bennettitales.
95. In what respects Gnetales are different from other gymnosperms.
96. Which fungi are associated with roots of *Pinus*.
97. How does dehiscence of microsporangia in *Pinus* take place?
98. Draw a diagram of male cone in *Pinus*.
99. What is polyembryony? Explain it with reference to *Pinus*.
100. What are bars of Sanio?
101. What conclusions were drawn by Florin about the female cone of *Pinus*.
102. Draw the life cycle of *Ephedra*.
103. Write the source of Canada balsam.
104. Name any two species of *Pinus* which yield resin and their application.
105. Write name of five ornamental plants of gymnosperms.
106. Name three edible sources of gymnosperms.
107. Define Fossils.
108. What is the Precambrian era and what characterized it?
109. Compare amber and pseudofossil.
110. Write about petrification.
111. What is ground thin section techniques.
112. Describe the structure of archegonium in *Ephedra*.
113. What is Mormon tea.
114. The stem of *Ephedra* easily breaks at the nodes. Why?

Long Answer Type Questions

1. Explain the process of DNA replication in different steps in prokaryotes.
2. Write an essay on the initiation elongation and termination of DNA change during replication.
3. Explain the first phase of transcription in prokaryote along with diagram.
4. Describe in detail the process of transcription in prokaryotes.
5. Describe how transcription is initiated and proceeds along the DNA strand.
6. Write an essay on genetic code.
7. Write an essay on characteristics of genetic code.
8. Describe three steps of translation.
9. Write about initiation elongation and termination of translation.
10. With the help of diagrams explain the process of translation.
11. Explain the stages of DNA replication.
12. Explain the different enzymes and proteins involved in DNA replication.
13. Write a note on RNA polymerases.
14. Explain the concept of Central dogma.
15. Describe Mendel's law of inheritance.
16. Explain inheritance of lethal genes in mice.
17. Explain test cross and back cross with example.
18. What is multiple allelism? Explain multiple allelism in the blood group of humans.
19. Explain polygenic inheritance in kernel colour in wheat.
20. Explain complementary genes in Lathyrus flower colour.
21. Explain dominant epistasis in fruit colour in Cucurbita.
22. Explain recessive epistasis in coat colour of mice.
23. What do you understand by gene interactions? Explain with suitable example allelic and non-allelic interactions.
24. Explain plastid inheritance in the leaves of *Mirabilis jalapa*.
25. Explain mitochondrial cytoplasmic male sterility in maize.
26. What is polyploidy? What are its types and explain the characters of polyploids?
27. Explain Allopolyploids, their origin, characteristics and applications in crop improvement?
28. Give an account of autopolyploids.
29. Describe in detail the various intra chromosomal aberration.
30. What is mutation? What are its types? Illustrated their characteristics.
31. What is spontaneous mutation? Give an account of their causes and characteristics.
32. What are mutagens? Explain types of mutagens with example.
33. Explain Mendelian monohybrid cross with example.
34. Explain Mendelian dihybrid cross with example.
35. Write a note on general characters of pteridophytes.

36. Write about the classification of pteridophytes
37. Describe the economic importance of pteridophytes
38. Explain heterospory.
39. Explain seed habit
40. Mention the affinities of pteridophyte with bryophytes and gymnosperms.
41. Describe the evolution of Stele.
42. Describe Rhynia.
43. Draw the diagram of synangia and explain.
44. Write about the strobilus of Selaginella.
45. Write about the development of male and female gametophyte in Selaginella.
46. Describe the structure of Equisetum.
47. Write about the strobilus of Equisetum.
48. Draw the diagram of the T.S. of rhizome of Marsilea and explain.
49. Write a note on sporocarp of Marsilea.
50. Describe in detail the male and female gametophyte in Marsilea.
51. Write a note on external structure of Psilotum.
52. Describe the anatomy of aerial shoot of Equisetum.
53. Describe the distribution of gymnosperms in India.
54. Elaborate the classification of gymnosperms proposed by Sporne.
55. Describe the important characters of gymnosperms.
56. Describe the development of male and female gametophyte of *Cycas*.
57. Discuss the development of embryo in *Cycas*.
58. Why *Cycas* is called a living fossil.
59. Describe briefly the habitat, habit and external morphology of *Cycas*.
60. Draw and discuss the secondary growth in *Pinus*.
61. Give an illustrated account of the internal structure of the *Pinus* needle and point out its xeromorphic features.
62. Describe the post fertilization changes occurring in the ovule of *Pinus*.
63. Describe the anatomy of *Ephedra* stem and comment upon the features of special interest.
64. Comment briefly on geographic distribution of *Ephedra* and enumerate the salient features of its life cycle.
65. Describe the range of structure in the female gametophyte of gymnosperms studied by you.
66. Compare the male gametophyte of *Cycas*, *Pinus* and *Ephedra*.
67. Elaborate geological time scale.
68. Describe type of fossil and techniques for study of fossils.
69. Write an essay on the economic importance of gymnosperms.
70. "Gymnosperms are a connecting link between angiosperms and pteridophytes." Comment.